

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Cancel claims 1-41 without prejudice

42. (original) An exercise apparatus, comprising:

a frame;

a pedal support assembly; and

left and right pedals interconnected to the frame by the pedal support assembly and adapted to be moved in any one of the following ways:

(1) in a substantially vertical direction;

(2) in a substantially horizontal direction; and

(3) simultaneously in a substantially vertical direction and a substantially horizontal direction;

wherein the pedal support assembly includes:

a horizontal guide assembly configured to enable the pedals to move in a horizontal direction;

a vertical guide assembly configured to enable the pedals to move in a vertical direction; and

a motion translation mechanism configured to link the pedals to move reciprocally; and

wherein the motion translation mechanism further includes:

a resistance subsystem configured to apply a resistance force to act against the movement of each of the pedals; and

a controller configured to selectively adjust the resistance applied by the resistance subsystem.

43. (currently amended) An exercise apparatus, comprising:

a frame;

a pair of pedals interconnected to the frame by a pedal support assembly;

a horizontal motion translation linkage coupled to each of the pedals and configured to link the horizontal motion of the pedals; and

a vertical motion translation linkage coupled to each of the pedals and configured to link the vertical motion of the pedals, wherein the pedal support assembly includes vertical guides coupled with horizontal guides.

44. (currently amended) An exercise apparatus, comprising:

a frame;

a pedal interconnected to the frame;

a horizontal guide configured to guide horizontal motion of the pedals; and

a vertical guide configured ^{to} guide vertical motion of the pedal coupled with the horizontal guide.

45. (currently amended) An exercise apparatus, comprising:

a frame;

a pair of pedals interconnected to the frame by a pedal support assembly having a vertical guide member coupled with a horizontal guide member, the pedals being

configured to move forwardly and rearwardly in a horizontal direction and up and down in a vertical direction to any point within a predefined range of motion including a horizontal dimension and a vertical dimension; and

a resistance subsystem configured to constrain movement of the pedals to a predefined path within the predefined range of motion.

46. (original) The apparatus of claim 45, wherein the resistance subsystem includes an electromechanical resistance drive.

47. (original) The apparatus of claim 45, wherein the predefined path is selected from the group consisting of circular pedal path, elliptical pedal path, parallelogram pedal path, linear pedal path, curvilinear pedal path, vertical pedal path, horizontal pedal path, diagonal pedal path, spiral pedal path, and rectilinear pedal path.

48. (currently amended) A method of moving pedals on an exercise apparatus, the method comprising:

configuring the pedals for free motion to move to any point within a predefined range of motion including a horizontal dimension and a vertical dimension; and

constraining the motion of the pedals to a predefined pedal path within the predefined range of motion via a selectively applied resistance force.

49. (new) The exercise apparatus of claim 43, wherein the vertical guides couple with the horizontal guides by vertical roller assemblies.

50. (new) The exercise apparatus of claim 49, wherein the vertical roller assemblies include mounting plates configured to support wheels and attach to the horizontal guides.

51. (new) The exercise apparatus of claim 50, wherein the vertical guides are configured to accommodate wheels from the vertical roller assemblies and guide the vertical motion of the vertical roller assemblies.

52. (new) The exercise apparatus of claim 49, wherein the pedals are fixedly mounted to the horizontal guides and the horizontal guides are configured to slide horizontally relative to the vertical guides.

53. (new) The exercise apparatus of claim 43, wherein the horizontal motion translation linkage includes shafts coupled via ball spline joints and flexible tensile members to reciprocally link the horizontal motion of the pedals.

54. (new) The exercise apparatus of claim 43, wherein the vertical motion translation linkage includes a flexible tensile member and rotating gears to reciprocally link the vertical motion of the pedals.

55. (new) The exercise apparatus of claim 44, further comprising:
a horizontal motion translation linkage coupled to each of the pedals and configured to link the horizontal motion of the pedals; and
a vertical motion translation linkage coupled to each of the pedals and configured to link the vertical motion of the pedals.

56. (new) The exercise apparatus of claim 55, wherein the vertical guide is coupled with the horizontal guide by a vertical roller assembly.

57. (new) The exercise apparatus of claim 44, wherein the vertical guide is coupled with the horizontal guide by a vertical roller assembly.

58. (new) the exercise apparatus of claim 57, wherein the vertical roller assembly includes wheels configured to travel along the vertical guide and a mounting plate configured to support the wheels and couple the vertical roller assembly to the horizontal guides.

59. (new) The exercise apparatus of claim 45, wherein the vertical guide member is coupled with the horizontal guide member by a vertical roller assembly.

60. (new) The exercise apparatus of claim 59, wherein the vertical roller assembly includes wheels configured to travel along the vertical guide and a mounting plate configured to support the wheels and couple the vertical roller assembly to the horizontal guides.
